CLAIMS

1. (currently amended) A method for determining a new restoration path corresponding to a new primary path for a new service in a mesh network having a plurality of nodes interconnected by a plurality of links, the network having one or more existing primary paths and one or more corresponding existing restoration paths for one or more corresponding existing services, the method comprising:

generating a path cost for each of a plurality of candidate restoration paths associated with the new service; and

selecting the new restoration path for the new service based on the path cost for each candidate restoration path, wherein generating the path cost for a candidate restoration path comprises:

determining, for each link *Li* of one or more links in the candidate restoration path, a set *B-Li-set* of links in the one or more existing primary paths that are already protected by link *Li*;

determining, for each link *Li*, a set *I-Li-set* of links in the set *B-Li-set* that are also in the new primary path;

calculating, for each link *Li*, a link cost *Cost_Li* based on the set *B-Li-set* and the set *I-Li-set*; and

calculating the path cost based on a sum of the one or more link costs *Cost_Li*.

2. (currently amended) The invention of claim 1, wherein the set *I-Li-set* is determined from an intersection of the set *B-Li-set* and a set *P-set* of links in the new primary path.

3. (original) The invention of claim 1, wherein, for link *Li*, the link cost *Cost_Li* is a function of whether or not the set *B-Li-set* is empty.

4. (original) The invention of claim 3, wherein:

if the set *B-Li-set* is empty, then the link cost *Cost_Li* is based on bandwidth of the new service; and

if the set *B-Li-set* is not empty, then the link cost *Cost_Li* is a function of whether or not the set *I-Li-set* is empty.

5. (original) The invention of claim 4, wherein:

if the set *I-Li-set* is empty, then the link cost *Cost_Li* is based on a difference between the bandwidth of the new service and bandwidth currently reserved on the link *Li*; and

if the set *I-Li-set* is not empty, then the link cost *Cost_Li* is based on a difference between (a) a sum of the bandwidth of the new service and maximum service bandwidth protected by link *Li* for all links in the set *I-Li-set* and (b) the bandwidth currently reserved on the link *Li*.

6. (original) The invention of claim 4, wherein the path cost is set to a relatively high level if there is not enough capacity on the link *Li* to protect the new service.

7. (original) The invention of claim 1, wherein the method is implemented for each of a plurality of candidate primary paths to generate a path cost associated with the candidate primary path and further comprising selecting one of the candidate primary paths for the new service based on minimum path cost.

8. (original) The invention of claim 1, wherein the network is an open shortest path first (OSPF) network and restoration bandwidth information associated with each link in the candidate restoration path is transmitted between nodes using a data structure defined by OSPF with traffic engineering extensions (OSPF-TE) and OSPF opaque link-state advertisement option.

9. (currently amended) A network manager for a mesh network having a plurality of nodes interconnected by a plurality of links, the network manager adapted to determine a new restoration path corresponding to a new primary path for a new service in the mesh network, the network having one or more existing primary paths and one or more corresponding existing restoration paths for one or more corresponding existing services, wherein:

the network manager is adapted to generate a path cost for each of a plurality of candidate restoration paths associated with the new service; and

the network manager is adapted to select the new restoration path for the new service based on the path cost for each candidate restoration path, wherein generating the path cost for a candidate restoration path comprises:

determining, for each link *Li* of one or more links in the candidate restoration path, a set *B-Li-set* of links in the one or more existing primary paths that are already protected by link *Li*;

determining, for each link *Li*, a set *I-Li-set* of links in the set *B-Li-set* that are also in the new primary path;

calculating, for each link *Li*, a link cost *Cost_Li* based on the set *B-Li-set* and the set *I-Li-set*; and

calculating the path cost based on a sum of the one or more link costs *Cost_Li*.

10. (original) The invention of claim 9, wherein the network manager is distributed over the network.

11. (original) The invention of claim 9, wherein the network manager is located at a single node of the network.

12. (currently amended) The invention of claim 9, wherein the set *I-Li-set* is determined from an intersection of the set *B-Li-set* and a set *P-set* of links in the new primary path.

13. (previously presented) The invention of claim 9, wherein, for link *Li*, the link cost *Cost_Li* is a function of whether or not the set *B-Li-set* is empty.

14. (previously presented) The invention of claim 13, wherein:

if the set *B-Li-set* is empty, then the link cost *Cost_Li* is based on bandwidth of the new service; and

if the set *B-Li-set* is not empty, then the link cost *Cost_Li* is a function of whether or not the set *I-Li-set* is empty.

15. (previously presented) The invention of claim 14, wherein:

if the set *I-Li-set* is empty, then the link cost *Cost_Li* is based on a difference between the bandwidth of the new service and bandwidth currently reserved on the link *Li*; and

if the set *I-Li-set* is not empty, then the link cost *Cost_Li* is based on a difference between (a) a sum of the bandwidth of the new service and maximum service bandwidth protected by link *Li* for all links in the set *I-Li-set* and (b) the bandwidth currently reserved on the link *Li*.

16. (previously presented) The invention of claim 14, wherein the path cost is set to a relatively high level if there is not enough capacity on the link *Li* to protect the new service.

17. (previously presented) The invention of claim 9, wherein, for each of a plurality of candidate primary paths, the network manager is adapted to (i) generate a path cost associated with the candidate primary path and (ii) select one of the candidate primary paths for the new service based on minimum path cost.

18. (new) The invention of claim 9, wherein:

the new primary path and the new restoration path share a common source node and a common destination node; and

other than the source and destination nodes, the new primary path and the new restoration path are node disjoint.

19. (new) The invention of claim 1, wherein:

the new primary path and the new restoration path share a common source node and a common destination node; and

other than the source and destination nodes, the new primary path and the new restoration path are node disjoint.